FIG. 1

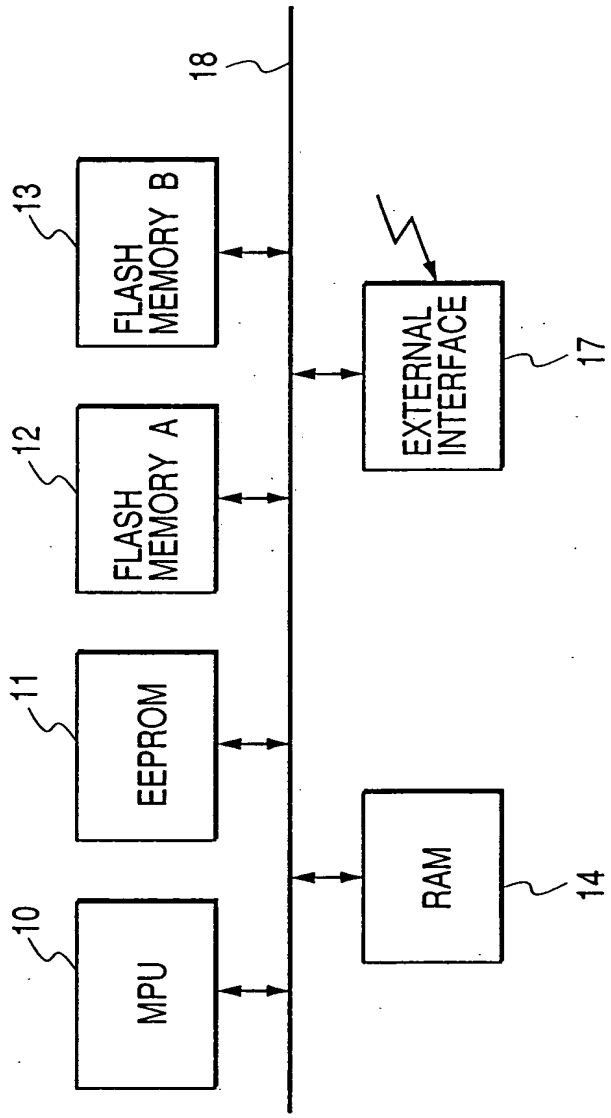

18
13
FLASH MEMORY B
12
FLASH MEMORY A
11
EEPROM
10
MPU
EXTERNAL INTERFACE
17
RAM
14

FIG. 2

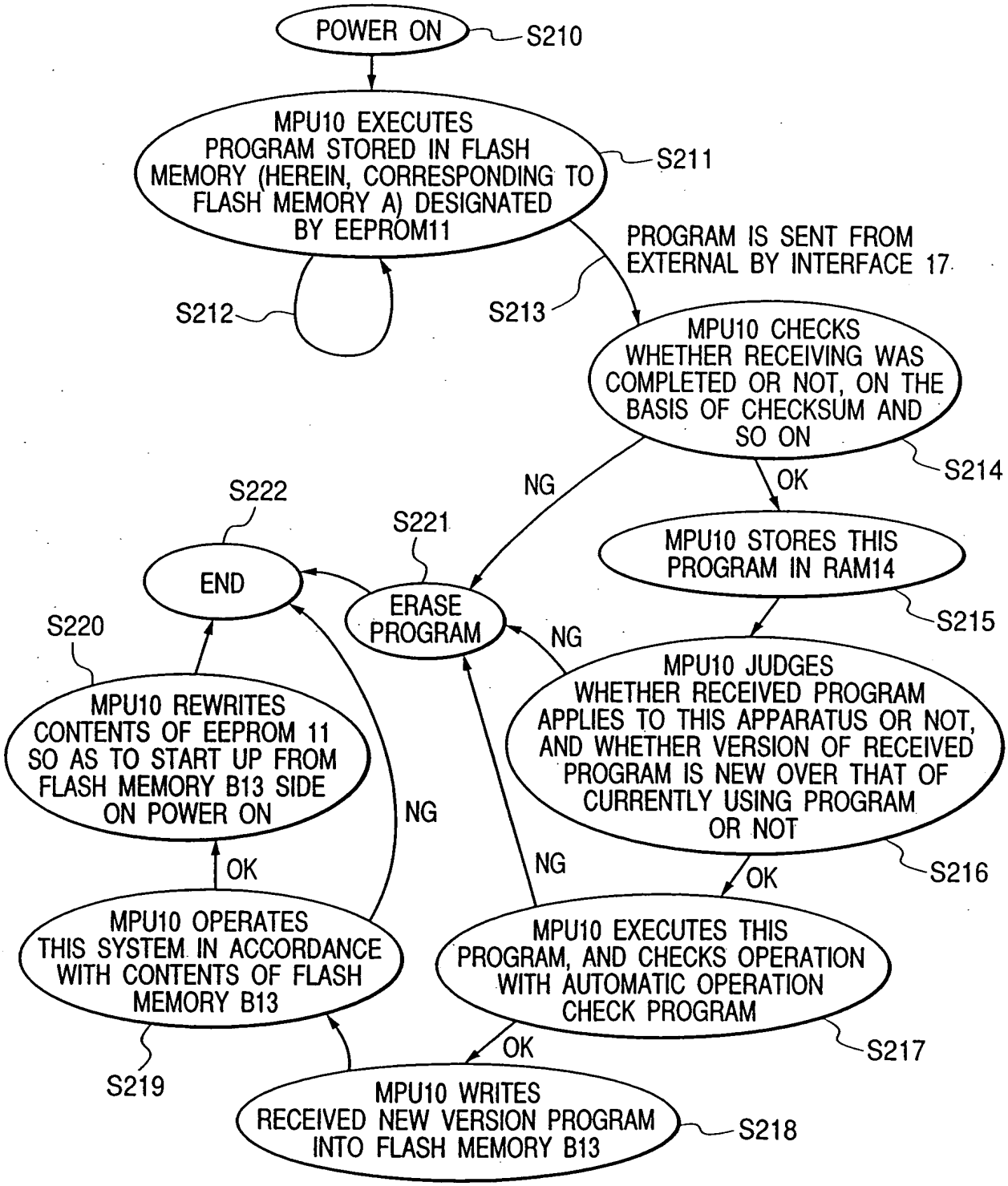

POWER ON
S210
MPU10 EXECUTES PROGRAM STORED IN FLASH MEMORY (HEREIN, CORRESPONDING TO FLASH MEMORY A) DESIGNATED BY EEPROM11
S211
S212
PROGRAM IS SENT FROM EXTERNAL BY INTERFACE 17
S213
MPU10 CHECKS WHETHER RECEIVING WAS COMPLETED OR NOT, ON THE BASIS OF CHECKSUM AND SO ON
S214
NG
OK
MPU10 STORES THIS PROGRAM IN RAM14
S215
S222
S221
END
ERASE PROGRAM
NG
S220
MPU10 JUDGES WHETHER RECEIVED PROGRAM APPLIES TO THIS APPARATUS OR NOT, AND WHETHER VERSION OF RECEIVED PROGRAM IS NEW OVER THAT OF CURRENTLY USING PROGRAM OR NOT
S216
MPU10 REWRITES CONTENTS OF EEPROM 11 SO AS TO START UP FROM FLASH MEMORY B13 SIDE ON POWER ON
NG
NG
OK
OK
MPU10 OPERATES THIS SYSTEM IN ACCORDANCE WITH CONTENTS OF FLASH MEMORY B13
MPU10 EXECUTES THIS PROGRAM, AND CHECKS OPERATION WITH AUTOMATIC OPERATION CHECK PROGRAM
S217
S219
OK
MPU10 WRITES RECEIVED NEW VERSION PROGRAM INTO FLASH MEMORY B13
S218

FIG. 3

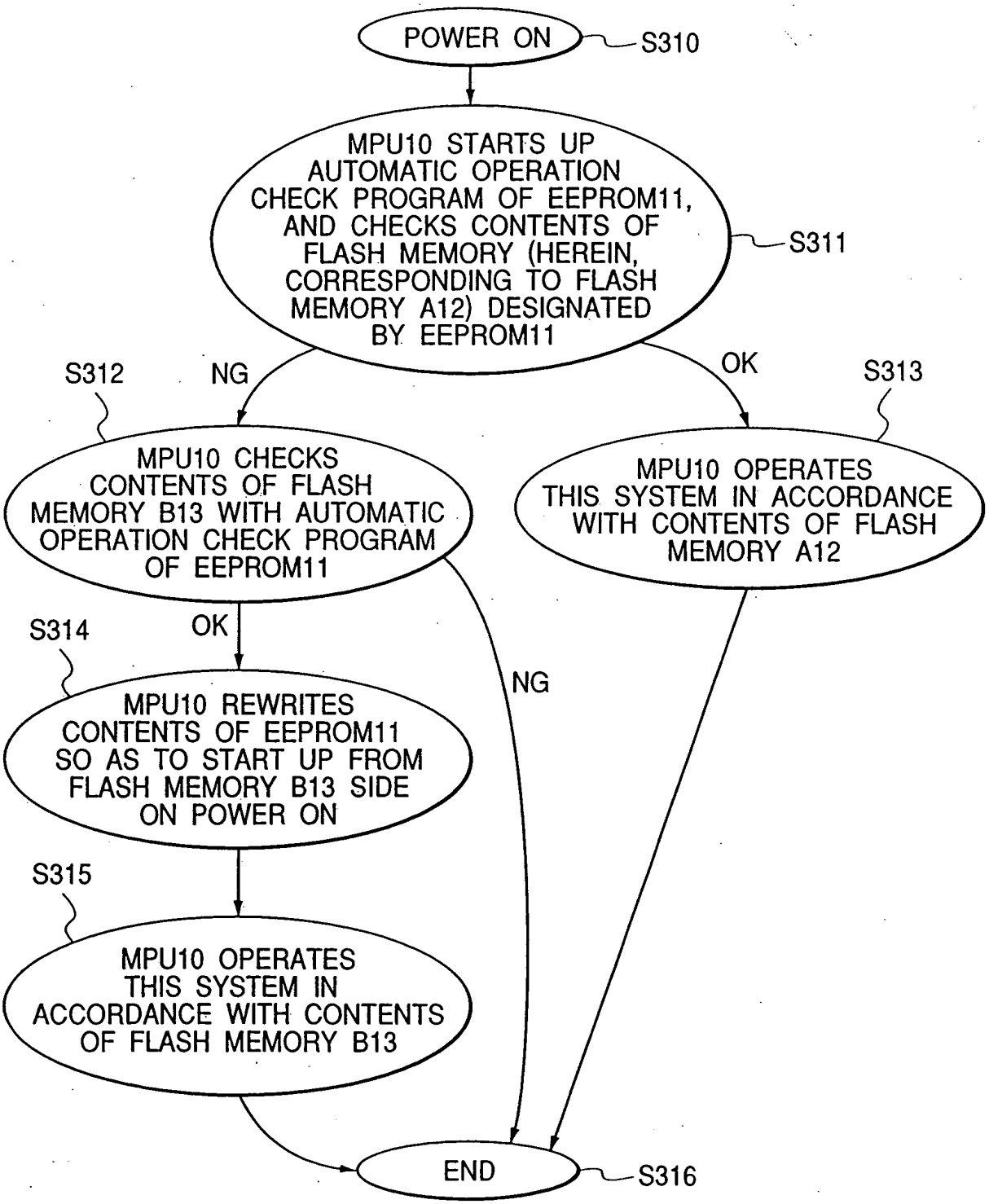

POWER ON
S310
MPU10 STARTS UP AUTOMATIC OPERATION CHECK PROGRAM OF EEPROM11, AND CHECKS CONTENTS OF FLASH MEMORY (HEREIN, CORRESPONDING TO FLASH MEMORY A12) DESIGNATED BY EEPROM11
S311
S312
NG
OK
S313
MPU10 CHECKS CONTENTS OF FLASH MEMORY B13 WITH AUTOMATIC OPERATION CHECK PROGRAM OF EEPROM11
MPU10 OPERATES THIS SYSTEM IN ACCORDANCE WITH CONTENTS OF FLASH MEMORY A12
S314
OK
NG
MPU10 REWRITES CONTENTS OF EEPROM11 SO AS TO START UP FROM FLASH MEMORY B13 SIDE ON POWER ON
S315
MPU10 OPERATES THIS SYSTEM IN ACCORDANCE WITH CONTENTS OF FLASH MEMORY B13
END
S316

FIG. 4

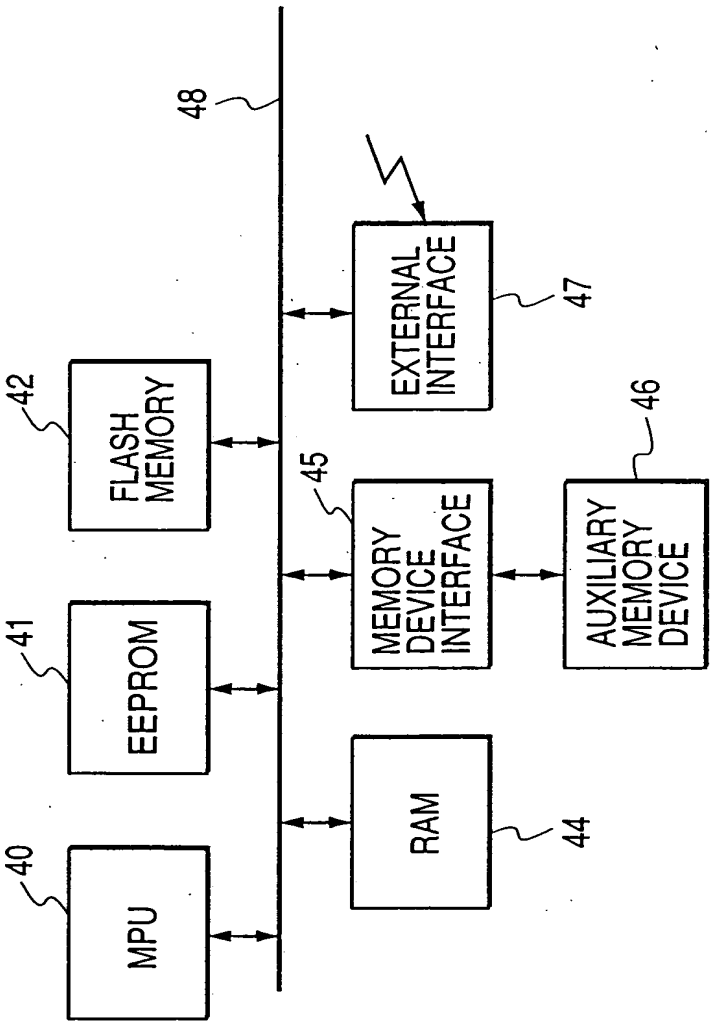

48
42
FLASH MEMORY
EXTERNAL INTERFACE
47
45
MEMORY DEVICE INTERFACE
46
AUXILIARY MEMORY DEVICE
41
EEPROM
RAM
44
40
MPU

FIG. 5

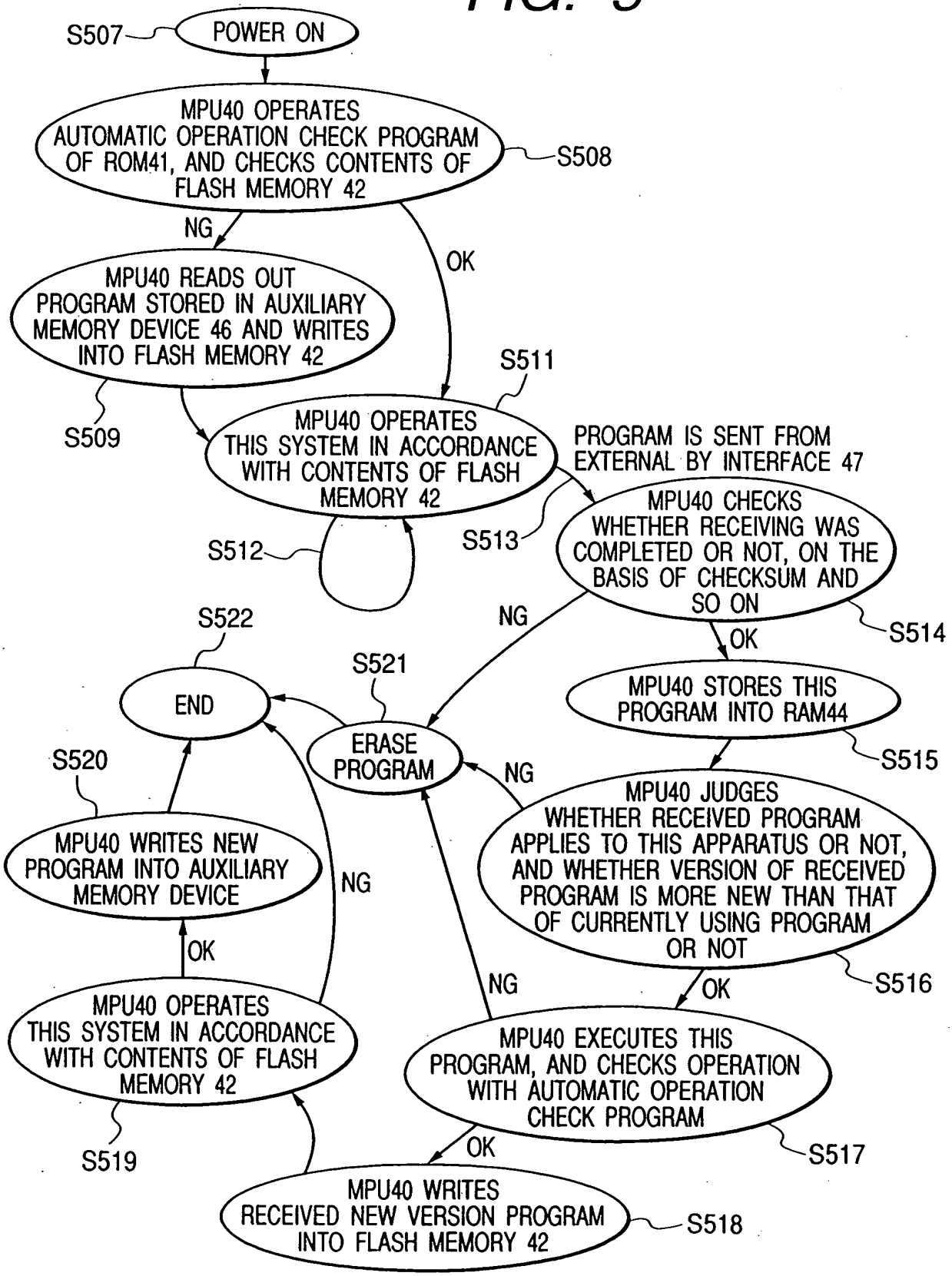

S507
POWER ON
MPU40 OPERATES AUTOMATIC OPERATION CHECK PROGRAM OF ROM41, AND CHECKS CONTENTS OF FLASH MEMORY 42
S508
NG
OK
MPU40 READS OUT PROGRAM STORED IN AUXILIARY MEMORY DEVICE 46 AND WRITES INTO FLASH MEMORY 42
S509
S511
MPU40 OPERATES THIS SYSTEM IN ACCORDANCE WITH CONTENTS OF FLASH MEMORY 42
S512
PROGRAM IS SENT FROM EXTERNAL BY INTERFACE 47
S513
MPU40 CHECKS WHETHER RECEIVING WAS COMPLETED OR NOT, ON THE BASIS OF CHECKSUM AND SO ON
S514
NG
OK
MPU40 STORES THIS PROGRAM INTO RAM44
S515
S521
ERASE PROGRAM
NG
MPU40 JUDGES WHETHER RECEIVED PROGRAM APPLIES TO THIS APPARATUS OR NOT, AND WHETHER VERSION OF RECEIVED PROGRAM IS MORE NEW THAN THAT OF CURRENTLY USING PROGRAM OR NOT
S516
OK
NG
MPU40 EXECUTES THIS PROGRAM, AND CHECKS OPERATION WITH AUTOMATIC OPERATION CHECK PROGRAM
S517
OK
MPU40 WRITES RECEIVED NEW VERSION PROGRAM INTO FLASH MEMORY 42
S518
S522
END
S520
MPU40 WRITES NEW PROGRAM INTO AUXILIARY MEMORY DEVICE
NG
OK
MPU40 OPERATES THIS SYSTEM IN ACCORDANCE WITH CONTENTS OF FLASH MEMORY 42
S519

FIG. 6

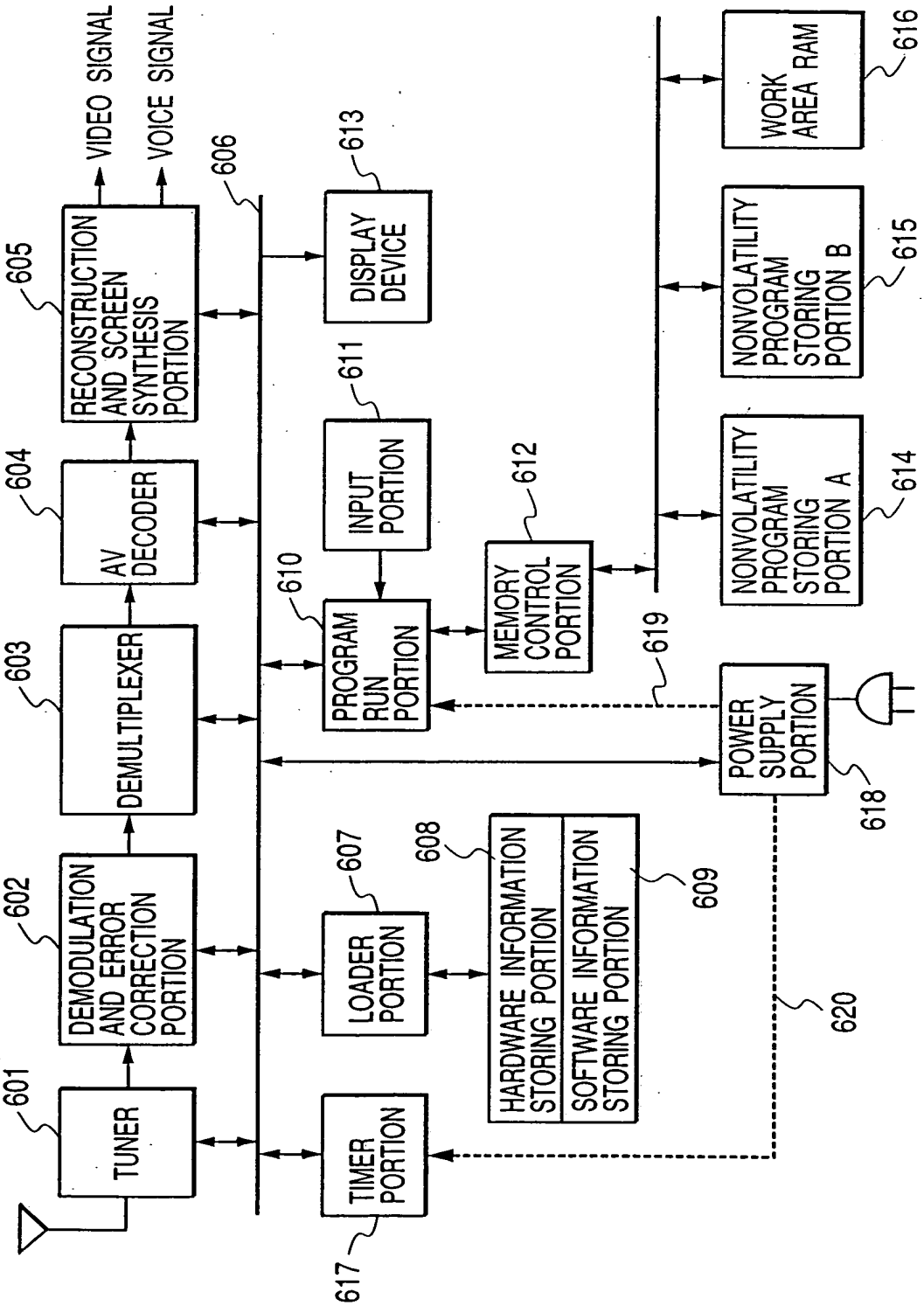

601
TUNER
602
DEMODULATION AND ERROR CORRECTION PORTION
603
DEMULTIPLEXER
604
AV DECODER
605
RECONSTRUCTION AND SCREEN SYNTHESIS PORTION
VIDEO SIGNAL
VOICE SIGNAL
606
607
LOADER PORTION
608
HARDWARE INFORMATION STORING PORTION
SOFTWARE INFORMATION STORING PORTION
609
610
PROGRAM RUN PORTION
611
INPUT PORTION
612
MEMORY CONTROL PORTION
613
DISPLAY DEVICE
614
NONVOLATILITY PROGRAM STORING PORTION A
615
NONVOLATILITY PROGRAM STORING PORTION B
616
WORK AREA RAM
617
TIMER PORTION
618
POWER SUPPLY PORTION
619
620

FIG. 7

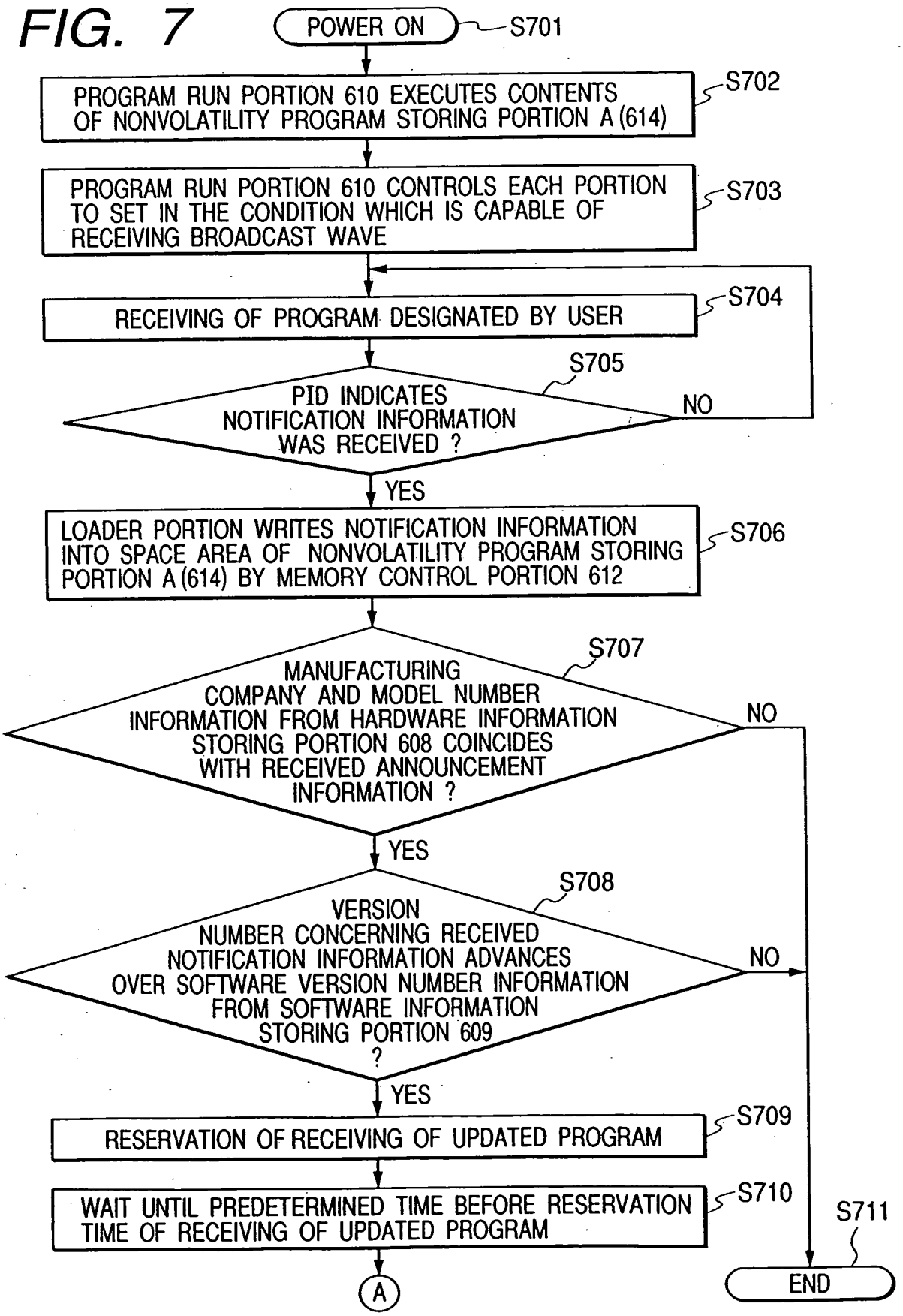

POWER ON
S701
PROGRAM RUN PORTION 610 EXECUTES CONTENTS OF NONVOLATILITY PROGRAM STORING PORTION A (614)
S702
PROGRAM RUN PORTION 610 CONTROLS EACH PORTION TO SET IN THE CONDITION WHICH IS CAPABLE OF RECEIVING BROADCAST WAVE
S703
RECEIVING OF PROGRAM DESIGNATED BY USER
S704
S705
PID INDICATES NOTIFICATION INFORMATION WAS RECEIVED ?
NO
YES
LOADER PORTION WRITES NOTIFICATION INFORMATION INTO SPACE AREA OF NONVOLATILITY PROGRAM STORING PORTION A (614) BY MEMORY CONTROL PORTION 612
S706
S707
MANUFACTURING COMPANY AND MODEL NUMBER INFORMATION FROM HARDWARE INFORMATION STORING PORTION 608 COINCIDES WITH RECEIVED ANNOUNCEMENT INFORMATION ?
NO
YES
S708
VERSION NUMBER CONCERNING RECEIVED NOTIFICATION INFORMATION ADVANCES OVER SOFTWARE VERSION NUMBER INFORMATION FROM SOFTWARE INFORMATION STORING PORTION 609 ?
NO
YES
RESERVATION OF RECEIVING OF UPDATED PROGRAM
S709
WAIT UNTIL PREDETERMINED TIME BEFORE RESERVATION TIME OF RECEIVING OF UPDATED PROGRAM
S710
A
S711
END

FIG. 8

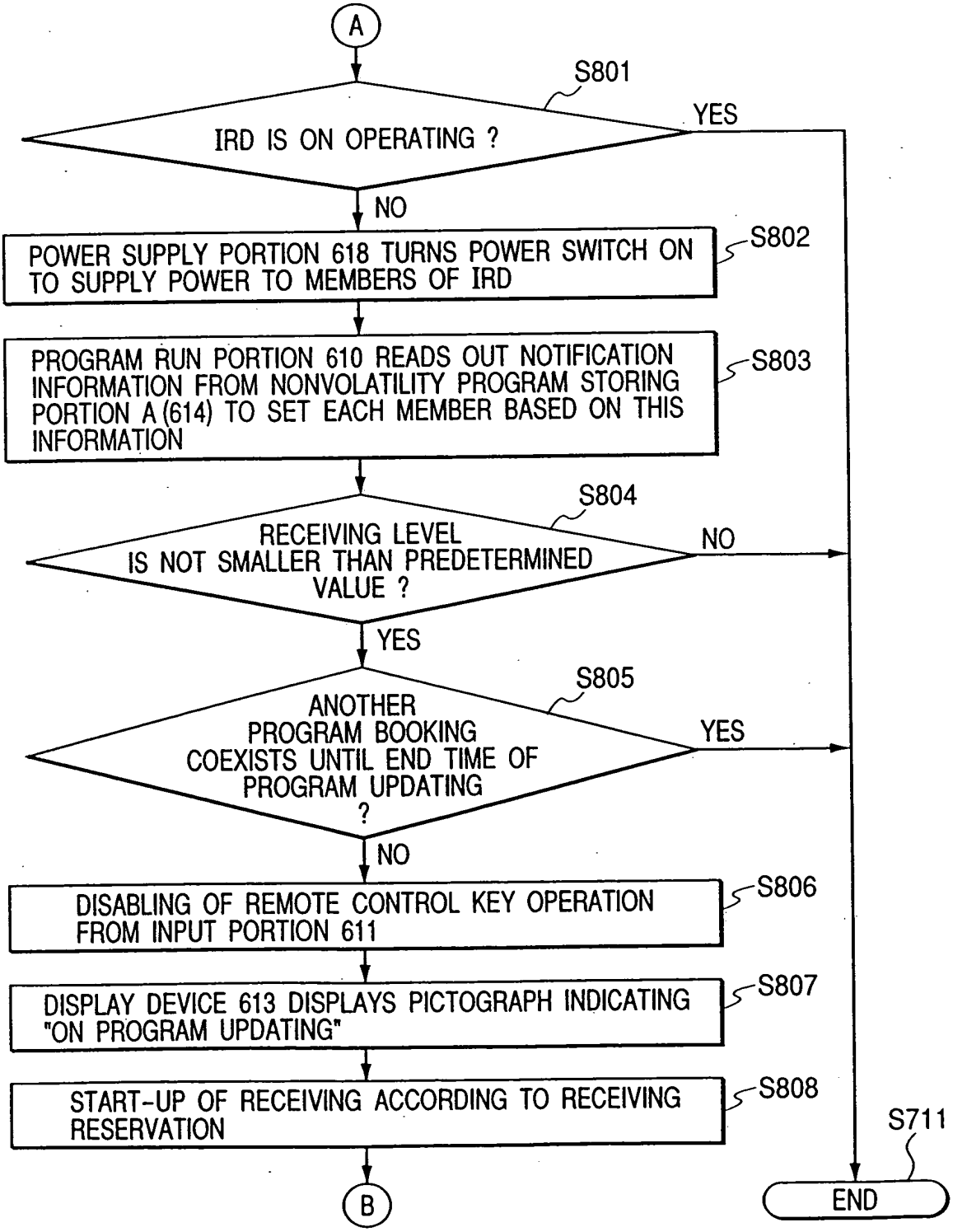

A
S801
IRD IS ON OPERATING ?
YES
NO
POWER SUPPLY PORTION 618 TURNS POWER SWITCH ON TO SUPPLY POWER TO MEMBERS OF IRD
S802
PROGRAM RUN PORTION 610 READS OUT NOTIFICATION INFORMATION FROM NONVOLATILITY PROGRAM STORING PORTION A (614) TO SET EACH MEMBER BASED ON THIS INFORMATION
S803
S804
RECEIVING LEVEL IS NOT SMALLER THAN PREDETERMINED VALUE ?
NO
YES
S805
ANOTHER PROGRAM BOOKING COEXISTS UNTIL END TIME OF PROGRAM UPDATING ?
YES
NO
DISABLING OF REMOTE CONTROL KEY OPERATION FROM INPUT PORTION 611
S806
DISPLAY DEVICE 613 DISPLAYS PICTOGRAPH INDICATING "ON PROGRAM UPDATING"
S807
START-UP OF RECEIVING ACCORDING TO RECEIVING RESERVATION
S808
B
S711
END

FIG. 9

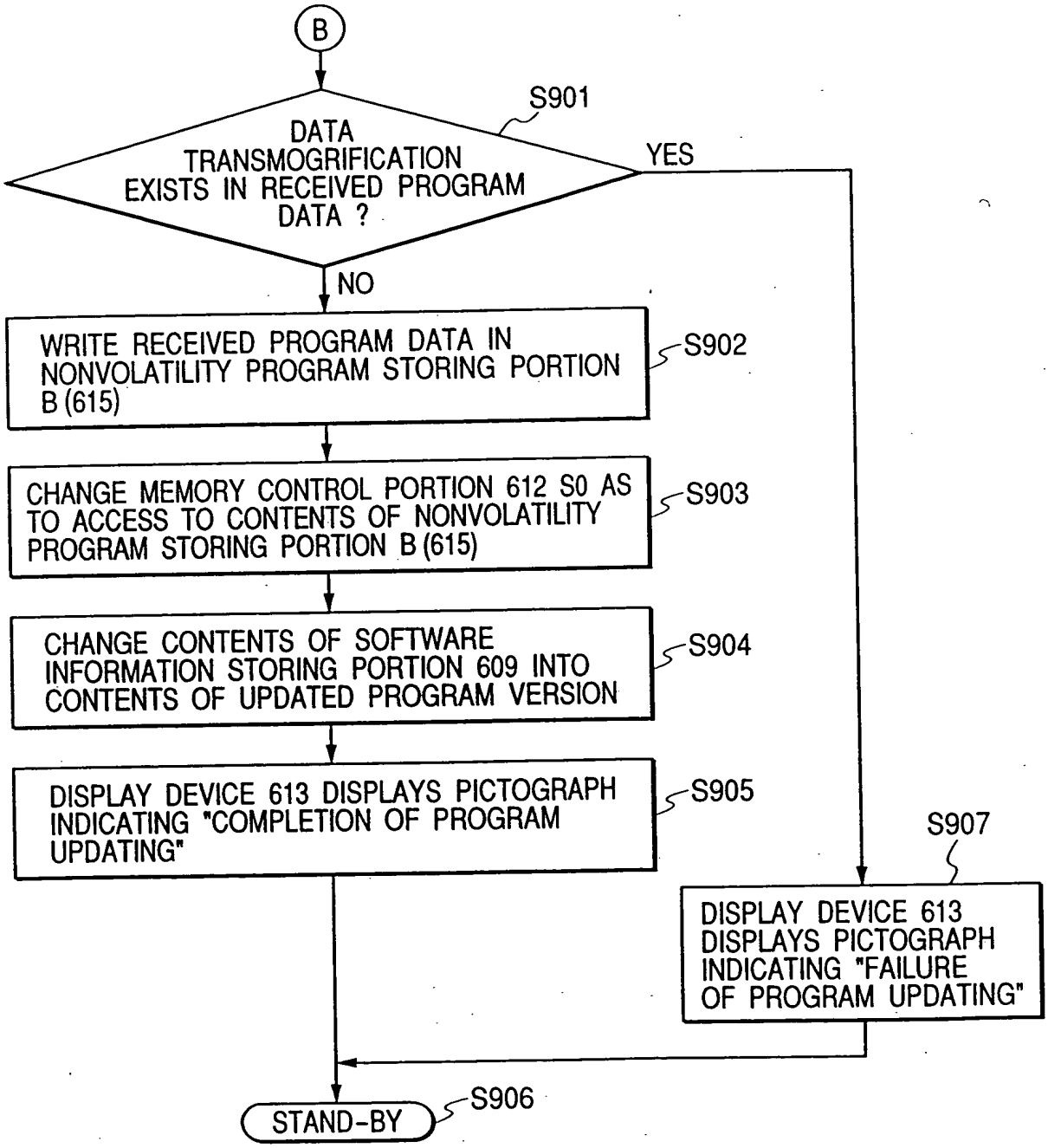

B
S901
DATA TRANSMOGRIFICATION EXISTS IN RECEIVED PROGRAM DATA ?
YES
NO
WRITE RECEIVED PROGRAM DATA IN NONVOLATILITY PROGRAM STORING PORTION B (615)
S902
CHANGE MEMORY CONTROL PORTION 612 S0 AS TO ACCESS TO CONTENTS OF NONVOLATILITY PROGRAM STORING PORTION B (615)
S903
CHANGE CONTENTS OF SOFTWARE INFORMATION STORING PORTION 609 INTO CONTENTS OF UPDATED PROGRAM VERSION
S904
DISPLAY DEVICE 613 DISPLAYS PICTOGRAPH INDICATING "COMPLETION OF PROGRAM UPDATING"
S905
S907
DISPLAY DEVICE 613 DISPLAYS PICTOGRAPH INDICATING "FAILURE OF PROGRAM UPDATING"
STAND-BY
S906

FIG. 10

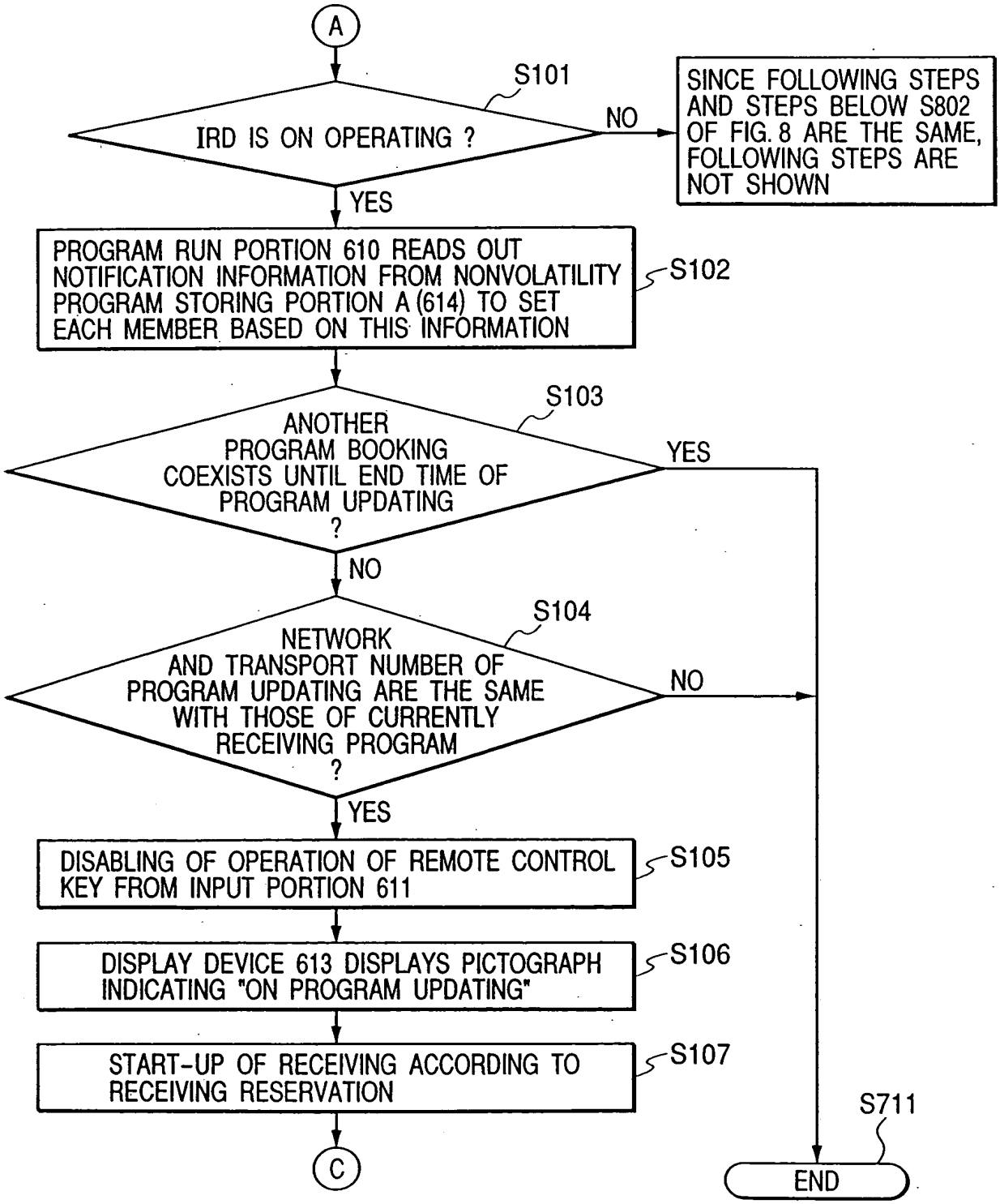
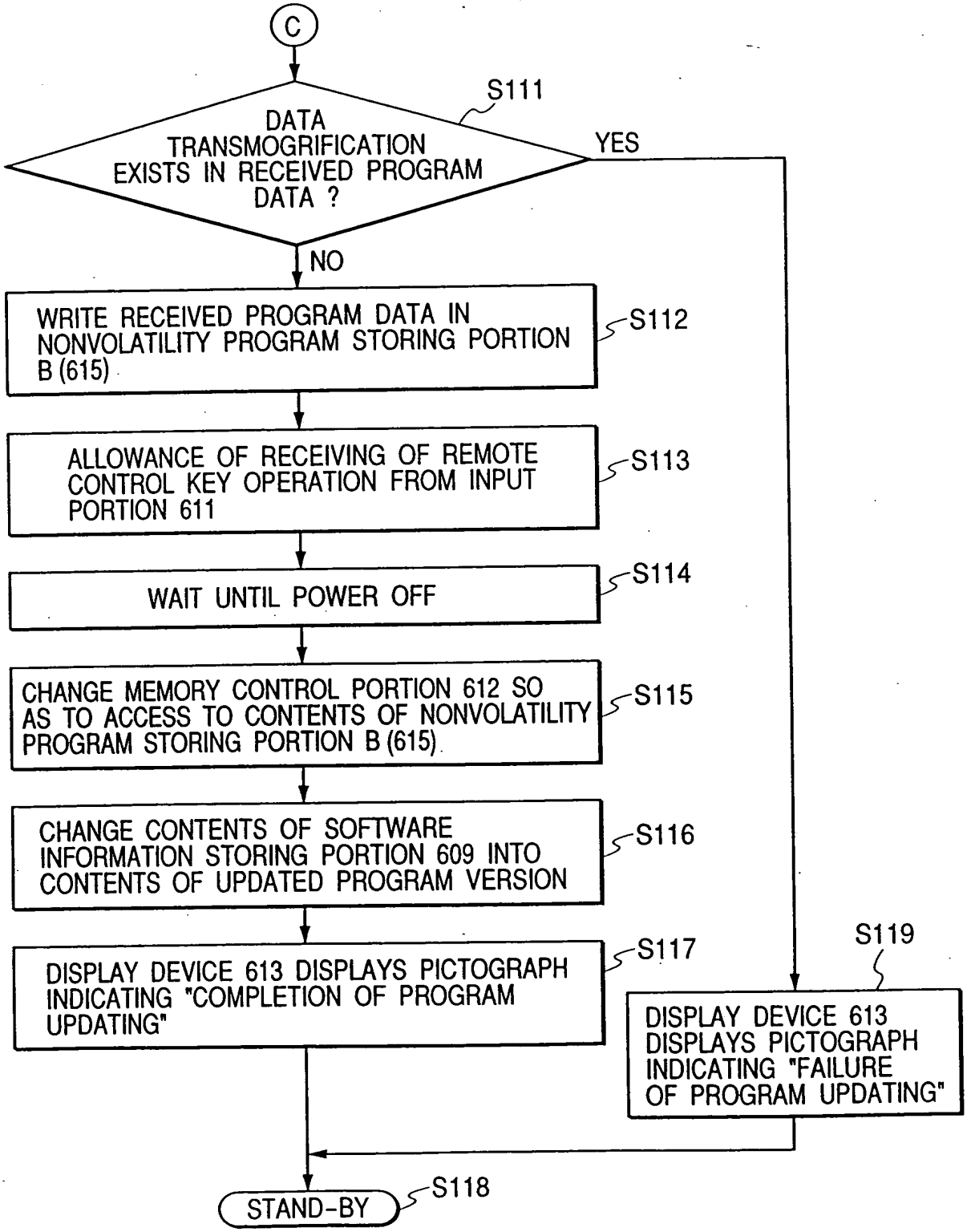

A
S101
IRD IS ON OPERATING ?
NO
SINCE FOLLOWING STEPS AND STEPS BELOW S802 OF FIG. 8 ARE THE SAME, FOLLOWING STEPS ARE NOT SHOWN
YES
PROGRAM RUN PORTION 610 READS OUT NOTIFICATION INFORMATION FROM NONVOLATILITY PROGRAM STORING PORTION A (614) TO SET EACH MEMBER BASED ON THIS INFORMATION
S102
S103
ANOTHER PROGRAM BOOKING COEXISTS UNTIL END TIME OF PROGRAM UPDATING ?
YES
NO
S104
NETWORK AND TRANSPORT NUMBER OF PROGRAM UPDATING ARE THE SAME WITH THOSE OF CURRENTLY RECEIVING PROGRAM ?
NO
YES
DISABLING OF OPERATION OF REMOTE CONTROL KEY FROM INPUT PORTION 611
S105
DISPLAY DEVICE 613 DISPLAYS PICTOGRAPH INDICATING "ON PROGRAM UPDATING"
S106
START-UP OF RECEIVING ACCORDING TO RECEIVING RESERVATION
S107
C
S711
END

FIG. 11


C
S111
DATA TRANSMOGRIFICATION EXISTS IN RECEIVED PROGRAM DATA ?
YES
NO
WRITE RECEIVED PROGRAM DATA IN NONVOLATILITY PROGRAM STORING PORTION B (615)
S112
ALLOWANCE OF RECEIVING OF REMOTE CONTROL KEY OPERATION FROM INPUT PORTION 611
S113
WAIT UNTIL POWER OFF
S114
CHANGE MEMORY CONTROL PORTION 612 SO AS TO ACCESS TO CONTENTS OF NONVOLATILITY PROGRAM STORING PORTION B (615)
S115
CHANGE CONTENTS OF SOFTWARE INFORMATION STORING PORTION 609 INTO CONTENTS OF UPDATED PROGRAM VERSION
S116
DISPLAY DEVICE 613 DISPLAYS PICTOGRAPH INDICATING "COMPLETION OF PROGRAM UPDATING"
S117
S119
DISPLAY DEVICE 613 DISPLAYS PICTOGRAPH INDICATING "FAILURE OF PROGRAM UPDATING"
STAND-BY
S118

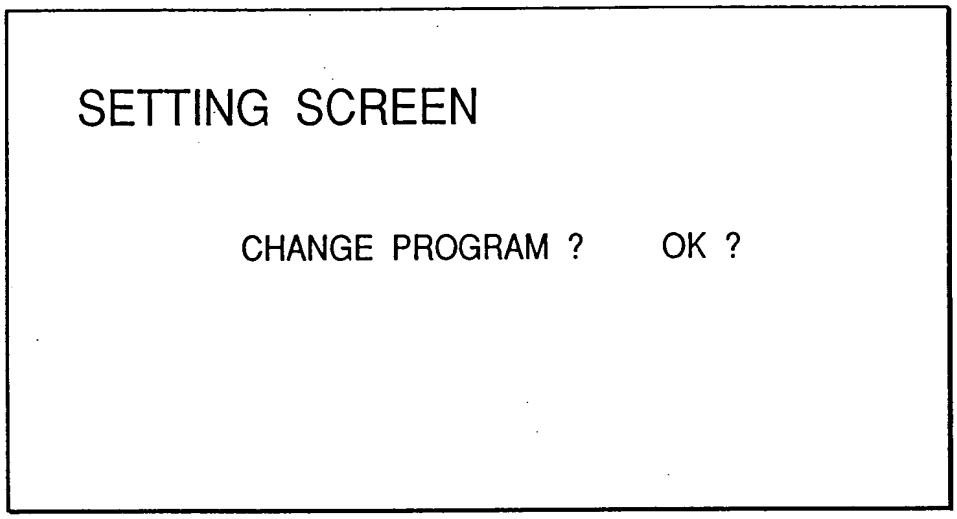



FIG. 12